

Overview



The complete flowmeter system SITRANS FC430 can be ordered for standard, hygienic or NAMUR service. All versions can be ordered for CT service, according to OIML R 117 (Liquids other than water).

All compact variants can be validated and configured for SIL 2 or SIL 3 operation as standard. SIL 3 operation requires two flowmeters in series and monitored by a SIL-rated control system.

The flowmeter is based on the latest developments within digital signal processing technology – engineered for high measuring performance:

- Fast response to rapid changes in flow
- Fast dosing applications
- High immunity against process noise
- High turndown ratio of flowrates
- Suitable for liquid and gas service
- Easy to install, commission and maintain

FC430 is available as standard with 4 to 20 mA analog output with HART 7.2. Additional input/output functions can be freely configured for analog, pulse, frequency, relay or status.

The transmitter comes with a user-configurable graphical display and new SensorFlash technology, a micro SD card for configuration backup, firmware update and data storage.

The SITRANS FC430 flowmeter system consists of a SITRANS FCS400 sensor and a SITRANS FCT030 transmitter.

Benefits

- It is narrow and light, fitting neatly into dense piping arrangements
- Easy maintenance because modules can be exchanged rapidly
- Effective separation of measurement from plant vibration
- Highly secure operation in safety critical applications
- Non-volatile memory of all setup and operation data
- Reliable measurements due to high signal to noise ratio
- Secure, digital transfer of measurement data from the sensor
- SensorFlash transfers setup and operating data, providing simple sensor replacement
- Short overall length; easy drop-in replacement into most existing installations

Technical specifications

Sizes	DN 15 (1/2") DN 25 (1") DN 50 (2") DN 80 (3")
Accuracy	± 0.10 %
Repeatability	± 0.05 %
Flow range (water @ 1 bar pressure loss)	DN 15: 3 700 kg/h (8 157 lb/h) DN 25: 11 500 kg/h (25 353 lb/h) DN 50: 52 000 kg/h (114 640 lb/h) DN 80: 136 000 kg/h (300 000 lb/h)
Architecture	Compact or remote configuration with selection of twelve languages including Chinese and Russian
Display	Full graphical display, 240 x 160 pixels
Power supply	24 ... 90 V DC, 100 ... 240 V AC
Weight	4.6 ... 50 kg
Material	<ul style="list-style-type: none"> • Sensor <ul style="list-style-type: none"> - Wetted parts: 316L stainless steel - Enclosure: 304 stainless steel • Transmitter: Aluminum with corrosion-resistant coating
Enclosure rating	IP67
Pressure ratings	<ul style="list-style-type: none"> • Measuring tubes: 100 bar (1450 psi) • Sensor enclosure: 20 bar (DN15, DN 25) 17 bar (DN 50, DN 80) • Sensor enclosure burst pressure: >160 bar (all sizes)
Temperature ratings	<ul style="list-style-type: none"> • Process medium: -50 ... +200 °C (-58 ... +392 °F) • Ambient: -40 ... +60 °C (-40 ... +140 °F)
Process connections	<ul style="list-style-type: none"> • Flanges: EN 1092-1 B1, EN 1092-1 D, ANSI/ASME B16.5, JIS B 2220 • Pipe threads: ASME B1.20 (NPT), ISO228-1 G (BSPP), VCO Quick-connect • Hygienic threads: DIN 11851, DIN 11864-1, ISO 2853, SMS 1145 • Hygienic clamps: DIN 11864-2, DIN 32676, ISO 2852
Approvals	<ul style="list-style-type: none"> • Hazardous area: ATEX, IECEx, cFMus, NEPSI, CSA, TISS, GOST) • Pressure equipment: PED, CRN • Hygienic: 3A, EHEDG • Custody transfer: SITRANS FC430 OIML R 117 • Operational safety (compact system only): SIL 2 (Sensor) SIL 3 (Transmitter and redundant system)
NAMUR	Complying with NE132, NE41
I/O	Up to 4 channels combining analog, relay or digital outputs and binary input
Communication	HART 7.2
EMC performance	EN 61326-3-2
Mechanical load	18 to 1000 Hz random, 3.17 G rms, in all directions

Flow Measurement

SITRANS F C

Flowmeter SITRANS FC430

Selection and Ordering data	Order No.	Ord. code
SITRANS FC430 Digital coriolis flowmeter with SITRANS FCS400 Standard flow sensor with hygienic and flange/pipe thread connections and compact or remote mounting with FCT030 transmitter	7ME4613-	
Sensor size, connection size		
DN 15, DN 10 (1/2", 3/8"), Q _{nom} = 3 700 m ³ /h	3 F	
DN 15, DN 15 (1/2", 1/2")	◆ 3 G	
DN 15, DN 20 (1/2", 3/4")	◆ 3 H	
DN 15, DN 25 (1/2", 1")	◆ 3 J	
DN 25, DN 15 (1", 1/2"), Q _{nom} = 11 500 m ³ /h	3 K	
DN 25, DN 25 (1", 1")	◆ 3 L	
DN 25, DN 40 (1", 1 1/2")	◆ 3 N	
DN 50, DN 40 (2", 1 1/2"), Q _{nom} = 52 000 m ³ /h	◆ 4 B	
DN 50, DN 50 (2", 2")	◆ 4 C	
DN 80, DN 65 (3", 2 1/2"), Q _{nom} = 136 000 m ³ /h	◆ 4 J	
DN 80, DN 80 (3", 3")	◆ 4 K	
DN 80, DN 100 (3", 4")	4 L	
Process connection		
EN1092-1 B1, PN 16	A 0	
EN1092-1 B1, PN 40	◆ A 1	
EN1092-1 B1, PN 63	A 2	
EN1092-1 B1, PN 100	◆ A 3	
EN1092-1 D nUT, PN 40	A 5	
EN1092-1 D nUT, PN 63	A 6	
EN1092-1 D nUT, PN 100	A 7	
ANSI B16.5-2009, class 150	◆ D 1	
ANSI B16.5-2009, class 300	D 2	
ANSI B16.5-2009, class 600	◆ D 3	
ISO228-1 G pipe thread	◆ E 1	
ASME B1.20.1 NPT pipe thread	◆ E 3	
DIN 11851 hygienic screwed	◆ F 1	
DIN32676 hygienic Tri-Clamp	◆ G 1	
DIN11864-1 aseptic screwed	◆ H 1	
DIN11864-2 aseptic flanged	H 2	
ISO 2852 hygienic clamped	◆ J 1	
ISO 2853 hygienic screwed	◆ J 5	
SMS 1145 hygienic screwed	K 1	
12-VCO-4 quick connect	K 5	
JIS B2200:2004/10K	L 2	
JIS B2220:2004/20K	L 4	
JIS B2220:2004/40K	L 6	
Wetted parts material		
AISI 316L/W1.4435/W1.4404 (100 barg max.)	◆ 1	
Calibration/Accuracy class		
0,1 % flow, 5 kg/m ³ density	◆ 1	
0,1 % flow, 1 kg/m ³ density	◆ 4	
Standard fraction calibration		
• API number	9	N 0 A
• Balling	9	N 0 B
• °Baumé light	9	N 0 C
• °Baumé heavy	9	N 0 D
• °Brix	9	N 0 E
• °Oeschlé	9	N 0 F
• °Plato	9	N 0 G
• Specific Gravity	9	N 0 H
• °Twaddell	9	N 0 J
• %HFCS42	9	N 0 K
• %HFCS55	9	N 0 L
• %HFCS90	9	N 0 M

Selection and Ordering data	Order No.	Ord. code
SITRANS FC430 Digital coriolis flowmeter with SITRANS FCS400 Standard flow sensor with hygienic and flange/pipe thread connections and compact or remote mounting with FCT030 transmitter	7ME4613-	
Transmitter/DSL material & mounting style		
Compact, IP67, aluminum	◆	D
Remote, IP67, aluminum, M12	◆	G
Remote, IP67, aluminum, T/Box	◆	K
Ex approval		
Non-Ex	◆	A
ATEX II 2GD	◆	C
IECEx GDb	◆	F
FM/CSA/UL Class 1, Div 1	◆	H
Local User Interface		
Blind	◆	1
Graphical, 240 x 160 pxl	◆	3
◆ Short lead time (details in PMD)		

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Cable glands	
Metric, no glands	◆ A 01
Metric, plastic	◆ A 02
Metric, brass/Ni plated	◆ A 05
Metric, stainless steel	◆ A 06
NPT, no glands	◆ A 11
NPT, Plastic	◆ A 12
NPT, brass/Ni plated	◆ A 15
NPT, stainless steel	◆ A 16
Software functions and CT approvals	
Standard	◆ B 11
CT standard	◆ B 31
I/O configuration Ch1	
Ca 4 ... 20 mA HART active SIL certified	◆ E 04
Cp 4 ... 20 mA HART passive SIL certified	◆ E 05
Only compact versions can be used in SIL applications.	

Selection and Ordering data	Order code
I/O configuration Ch2, Ch3 and Ch4	
None	◆ F00
aSignal, None, None	◆ F40
aSignal, aSignal, None	◆ F41
aSignal, aSignal, aSignal	◆ F42
aSignal, aSignal, Ia	◆ F43
aSignal, aSignal, R	◆ F44
aSignal, Ia, None	◆ F45
aSignal, Ia, Ia	◆ F46
aSignal, Ia, R	◆ F47
aSignal, R, None	◆ F50
aSignal, R, R	◆ F51
pSignal, None, None	◆ F60
pSignal, pSignal, None	◆ F61
pSignal, pSignal, pSignal	◆ F62
pSignal, pSignal, Ip	◆ F63
pSignal, pSignal, R	◆ F64
pSignal, Ip, None	◆ F65
pSignal, Ip, Ip	◆ F66
pSignal, Ip, R	◆ F67
pSignal, R, None	◆ F70
pSignal, R, R	◆ F71
aSignal, aSignal, pSignal	F80
aSignal, aSignal, Ip	F81
aSignal, pSignal, None	F82
aSignal, pSignal, pSignal	F83
aSignal, pSignal, Ia	F84
aSignal, pSignal, Ip	F85
aSignal, pSignal, R	F86
aSignal, Ia, Ip	F87
aSignal, Ip, None	F90
aSignal, Ip, Ip	F91
aSignal, Ip, R	F92
pSignal, pSignal, Ia	F93
pSignal, Ia, None	F94
pSignal, Ia, Ia	F95
pSignal, Ia, Ip	F96
pSignal, Ia, R	F97
Notes on I/O configurations:	
a or p suffix: The I/O module is selected at ordering with either active or passive function.	
Signal: The output can be selected for Current (0 or 4 to 20 mA), frequency or pulse function in the menu.	
I: Discrete status input to the flowmeter. Functions are selected in the menu including 'Freeze output', 'Reset totalizer'.	
R: Relay output for discrete status reporting. Function is selected in the menu, including 'Error', 'High flow warning'.	
The MLFB structure for FC430 systems must be filled to this level , including " -Z " options A., B., E. and F.	

Selection and Ordering data	Order code
Add-on options and accessories	
Please add " -Z " to Order No. and specify Order code(s).	
Certificates	
Pressure test certificate CRN	◆ C01
Pressure test certificate PED	◆ C02
Material certificate EN 10204-3.1	◆ C05
Welding inspection report	C07
Factory certificate to EN 10204 2.1	◆ C10
Factory certificate to EN 10204 2.2	◆ C11
Cable	
None	◆ L50
5 m (16.4 ft), standard with M12 plugs fitted	◆ L51
5 m (16.4 ft), standard	◆ L52
10 m (32.8 ft) standard with M12 plugs fitted	◆ L55
10 m (32.8 ft), standard	◆ L56
25 m (82 ft), standard with M12 plugs fitted	◆ L59
25 m (82 ft), standard	◆ L60
50 m (164 ft), standard with M12 plugs fitted	◆ L63
50 m (164 ft), standard	◆ L64
75 m (246 ft), standard with M12 plugs fitted	◆ L67
75 m (246 ft), standard	◆ L68
150 m (492 ft), standard with M12 plugs fitted	◆ L71
150 m (492 ft), standard	◆ L72
Additional data	
Please add " -Z " to Order No. and specify Order code(s) and plain text.	
Tag name	
Tag name plate, stainless steel	Y17
Transmitter setup	
Custom transmitter setup	Y20
Customer specific calibration	
Customer specific calibration (5 flow x 2 points)	Y61
Customer specific calibration (10 flow x 1 point)	Y62
◆ Short lead time (details in PMD)	

Operating instructions for SITRANS FC430

Description	Order No.
• English	A5E03361511
• German	A5E03651143
• Spanish	A5E03651152
• French	A5E03651188
• Italian	A5E03651190
• Chinese	A5E03922773

This device is shipped with a Quick Start guide and a CD containing further SITRANS F C literature.

All literature is also available for free at:
<http://www.siemens.com/flowdocumentation>

Flow Measurement

SITRANS F C

Flowmeter SITRANS FC430

Selection and Ordering data	Order No.	Ord. code
SITRANS FC430 Digital coriolis flowmeter ◆	7 ME 4 6 2 3 -	
with SITRANS FCS400 Flow sensor		
Hygienic version with Ra < 0.8 µm, 3A approved, and compact or remote mounting with FCT030 transmitter		
Sensor size, connection size		
DN 15, DN 10 (½", 3/8")	◆ 3 F	
DN 15, DN 15 (½", ½")	◆ 3 G	
DN 15, DN 20 (½", ¾")	◆ 3 H	
DN 15, DN 25 (½", 1")	◆ 3 J	
DN 25, DN 25 (1", 1")	◆ 3 L	
DN 25, DN 25 (1", 1¼")	◆ 3 M	
DN 25, DN 40 (1", 1½")	◆ 3 N	
DN 50, DN 40 (2", 1½")	◆ 4 B	
DN 50, DN 50 (2", 2")	◆ 4 C	
DN 80, DN 65 (3", 2½")	◆ 4 J	
DN 80, DN 80 (3", 3")	◆ 4 K	
Process connection		
DIN 11851 0,8 µm screwed	◆ F 1	
DIN 32676 0,8 µm Tri-Clamp	◆ G 1	
DIN 11864-1 0,8 µm screwed	◆ H 1	
DIN 11864-2 0,8 µm flanged	◆ H 2	
ISO 2852 0,8 µm clamped	◆ J 1	
ISO 2853 0,8 µm screwed	◆ J 5	
Wetted parts material		
ISO228-1 G pipe thread	◆ 1	
Calibration/Accuracy class		
0,1 % flow, 5 kg/m³ density	◆ 1	
0,1 % flow, 1 kg/m³ density	◆ 4	
Standard fraction calibration		
• API number	9	N 0 A
• Balling	9	N 0 B
• °Baumé light	9	N 0 C
• °Baumé heavy	9	N 0 D
• °Brix	9	N 0 E
• °Oeschlé	9	N 0 F
• °Plato	9	N 0 G
• Specific Gravity	9	N 0 H
• °Twaddell	9	N 0 J
• %HFCS42	9	N 0 K
• %HFCS55	9	N 0 L
• %HFCS90	9	N 0 M
Transmitter/DSL material and mounting style		
Compact, IP67, aluminum	◆ D	D
Remote, IP67, aluminum, M12	◆ G	G
Remote, IP67, aluminum, T/Box	◆ K	K
Ex approval		
Non-Ex	◆ A	A
ATEX II 2GD	◆ C	C
IECEX GDb	◆ F	F
FM/CSA/UL Class 1, Div 1	◆ H	H
Local User Interface		
Blind	◆ 1	1
Graphical, 240 x 160 pxl	◆ 3	3

◆ Short lead time (details in PMD)

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Cable glands	
Metric, no glands	◆ A01
Metric, plastic	◆ A02
Metric, brass/Ni plated	◆ A05
Metric, stainless steel	◆ A06
NPT, no glands	◆ A11
NPT, plastic	◆ A12
NPT, brass/Ni plated	◆ A15
NPT, stainless steel	◆ A16
Software functions and CT approvals	
Standard	◆ B11
CT standard	◆ B31
I/O configuration Ch1	
Ca 4 ... 20 mA HART active SIL certified	◆ E04
Cp 4 ... 20 mA HART passive SIL certified	◆ E05

Selection and Ordering data	Order code
I/O configuration Ch2, Ch3 and Ch4	
None	◆ F00
aSignal, None, None	◆ F40
aSignal, aSignal, None	◆ F41
aSignal, aSignal, aSignal	◆ F42
aSignal, aSignal, Ia	◆ F43
aSignal, aSignal, R	◆ F44
aSignal, Ia, None	◆ F45
aSignal, Ia, Ia	◆ F46
aSignal, Ia, R	◆ F47
aSignal, R, None	◆ F50
aSignal, R, R	◆ F51
pSignal, None, None	◆ F60
pSignal, pSignal, None	◆ F61
pSignal, pSignal, pSignal	◆ F62
pSignal, pSignal, Ip	◆ F63
pSignal, pSignal, R	◆ F64
pSignal, Ip, None	◆ F65
pSignal, Ip, Ip	◆ F66
pSignal, Ip, R	◆ F67
pSignal, R, None	◆ F70
pSignal, R, R	◆ F71
aSignal, aSignal, pSignal	F80
aSignal, aSignal, Ip	F81
aSignal, pSignal, None	F82
aSignal, pSignal, pSignal	F83
aSignal, pSignal, Ia	F84
aSignal, pSignal, Ip	F85
aSignal, pSignal, R	F86
aSignal, Ia, Ip	F87
aSignal, Ip, None	F90
aSignal, Ip, Ip	F91
aSignal, Ip, R	F92
pSignal, pSignal, Ia	F93
pSignal, Ia, None	F94
pSignal, Ia, Ia	F95
pSignal, Ia, Ip	F96
pSignal, Ia, R	F97
Notes on I/O configurations:	
a or p suffix: The I/O module is selected at ordering with either active or passive function.	
Signal: The output can be selected for Current (0 or 4 to 20 mA), frequency or pulse function in the menu.	
I: Discrete status input to the flowmeter. Functions are selected in the menu including 'Freeze output', 'Reset totalizer'.	
R: Relay output for discrete status reporting. Function is selected in the menu, including 'Error', 'High flow warning'.	
The MLFB structure for FC430 systems must be filled to this level , including " -Z " options A., B., E. and F.	

Selection and Ordering data	Order code
Add-on options and accessories	
Please add " -Z " to Order No. and specify Order code(s).	
Certificates	
Pressure test certificate CRN	◆ C01
Pressure test certificate PED	◆ C02
Material certificate EN 10204-3.1	◆ C05
Welding inspection report	C07
Factory certificate to EN 10204 2.1	◆ C10
Factory certificate to EN 10204 2.2	◆ C11
Cable	
None	◆ L50
5 m (16.4 ft), standard with M12 plugs fitted	◆ L51
5 m (16.4 ft), standard	◆ L52
10 m (32.8 ft) standard with M12 plugs fitted	◆ L55
10 m (32.8 ft), standard	◆ L56
25 m (82 ft), standard with M12 plugs fitted	◆ L59
25 m (82 ft), standard	◆ L60
50 m (164 ft), standard with M12 plugs fitted	◆ L63
50 m (164 ft), standard	◆ L64
75 m (246 ft), standard with M12 plugs fitted	◆ L67
75 m (246 ft), standard	◆ L68
150 m (492 ft), standard with M12 plugs fitted	◆ L71
150 m (492 ft), standard	◆ L72
Additional data	
Please add " -Z " to Order No. and specify Order code(s) and plain text.	
Tag name	
Tag name plate, stainless steel	Y17
Transmitter setup	
Custom transmitter setup	Y20
Customer specific calibration	
Customer specific calibration (5 flow x 2 points)	Y61
Customer specific calibration (10 flow x 1 point)	Y62
◆ Short lead time (details in PMD)	
Operating instructions for SITRANS FC430	
Description	Order No.
• English	A5E03361511
• German	A5E03651143
• Spanish	A5E03651152
• French	A5E03651188
• Italian	A5E03651190
• Chinese	A5E03922773
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Flow Measurement

SITRANS F C

Flowmeter SITRANS FC430

Selection and Ordering data	Order No.	Ord. code
SITRANS FC430 Digital coriolis flowmeter ◆	7ME4713-	
with SITRANS FCS400 NAMUR compliant flow sensor with flange/pipe thread connections and compact or remote mounting with FCT030 transmitter		
Sensor size, Connection size		
DN 15, DN 15 (½", ½")	◆ 3 G	
DN 25, DN 25 (1", 1")	◆ 3 L	
DN 50, DN 50 (2", 2")	◆ 4 C	
DN 80, DN 80 (3", 3")	◆ 4 K	
Process connection		
EN1092-1 B1, PN 40	◆ A 1	
EN1092-1 B1, PN 100	◆ A 3	
ANSI B16.5-2009, class 150	◆ D 1	
ANSI B16.5-2009, class 600	◆ D 3	
ISO228-1 G pipe thread	◆ E 1	
ASME B1.20.1 NPT pipe thread	◆ E 3	
Wetted parts material		
AISI 316L/W1.4435/W1.4404 (100 barg max.)	◆ 1	
Calibration/Accuracy class		
0,1 % flow, 5 kg/m³ density	◆ 1	
0,1 % flow, 1 kg/m³ density	◆ 4	
Standard fraction calibration		
• API number	9	N O A
• Balling	9	N O B
• °Baumé light	9	N O C
• °Baumé heavy	9	N O D
• °Brix	9	N O E
• °Oeschlé	9	N O F
• °Plato	9	N O G
• Specific Gravity	9	N O H
• °Twaddell	9	N O J
• %HFCS42	9	N O K
• %HFCS55	9	N O L
• %HFCS90	9	N O M
Transmitter/DSL material & mounting style		
Compact, IP67, aluminum	◆ D	
Remote, IP67, aluminum, M12	◆ G	
Remote, IP67, aluminum, T/Box	◆ K	
Ex approval		
Non-Ex	◆ A	
ATEX II 2GD	◆ C	
IECEX GDb	◆ F	
FM/CSA/UL Class 1, Div 1	◆ H	
Local User Interface		
Blind	◆ 1	
Graphical, 240 x 160 pxl	◆ 3	

◆ Short lead time (details in PMD)

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Cable glands	
Metric, no glands	◆ A01
Metric, plastic	◆ A02
Metric, brass/Ni plated	◆ A05
Metric, stainless steel	◆ A06
NPT, no glands	◆ A11
NPT, plastic	◆ A12
NPT, brass/Ni plated	◆ A15
NPT, stainless steel	◆ A16
Software functions and CT approvals	
Standard	◆ B11
CT standard	B31
I/O configuration Ch1	
Ca 4 ... 20 mA HART active, SIL certified	◆ E04
Cp 4 ... 20 mA HART passive, SIL certified	◆ E05

Selection and Ordering data	Order code
I/O configuration Ch2, Ch3 and Ch4	
None	◆ F00
aSignal, None, None	◆ F40
aSignal, aSignal, None	◆ F41
aSignal, aSignal, aSignal	◆ F42
aSignal, aSignal, Ia	◆ F43
aSignal, aSignal, R	◆ F44
aSignal, Ia, None	◆ F45
aSignal, Ia, Ia	◆ F46
aSignal, Ia, R	◆ F47
aSignal, R, None	◆ F50
aSignal, R, R	◆ F51
pSignal, None, None	◆ F60
pSignal, pSignal, None	◆ F61
pSignal, pSignal, pSignal	◆ F62
pSignal, pSignal, Ip	◆ F63
pSignal, pSignal, R	◆ F64
pSignal, Ip, None	◆ F65
pSignal, Ip, Ip	◆ F66
pSignal, Ip, R	◆ F67
pSignal, R, None	◆ F70
pSignal, R, R	◆ F71
aSignal, aSignal, pSignal	F80
aSignal, aSignal, Ip	F81
aSignal, pSignal, None	F82
aSignal, pSignal, pSignal	F83
aSignal, pSignal, Ia	F84
aSignal, pSignal, Ip	F85
aSignal, pSignal, R	F86
aSignal, Ia, Ip	F87
aSignal, Ip, None	F90
aSignal, Ip, Ip	F91
aSignal, Ip, R	F92
pSignal, pSignal, Ia	F93
pSignal, Ia, None	F94
pSignal, Ia, Ia	F95
pSignal, Ia, Ip	F96
pSignal, Ia, R	F97
Notes on I/O configurations:	
a or p suffix: The I/O module is selected at ordering with either active or passive function.	
Signal: The output can be selected for Current (0 or 4 to 20 mA), frequency or pulse function in the menu.	
I: Discrete status input to the flowmeter. Functions are selected in the menu including 'Freeze output', 'Reset totalizer'.	
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The MLFB structure for FC430 systems must be filled to this level , including " -Z " options A..., B..., E... and F...	

Selection and Ordering data	Order code
Add-on options and accessories	
Please add " -Z " to Order No. and specify Order code(s).	
Certificates	
Pressure test certificate CRN	◆ C01
Pressure test certificate PED	◆ C02
Material certificate EN 10204-3.1	◆ C05
Welding inspection report	C07
Factory certificate to EN 10204 2.1	◆ C10
Factory certificate to EN 10204 2.2	◆ C11
Cable	
None	◆ L50
5 m (16.4 ft), standard with M12 plugs fitted	◆ L51
5 m (16.4 ft), standard	◆ L52
10 m (32.8 ft) standard with M12 plugs fitted	◆ L55
10 m (32.8 ft), standard	◆ L56
25 m (82 ft), standard with M12 plugs fitted	◆ L59
25 m (82 ft), standard	◆ L60
50 m (164 ft), standard with M12 plugs fitted	◆ L63
50 m (164 ft), standard	◆ L64
75 m (246 ft), standard with M12 plugs fitted	◆ L67
75 m (246 ft), standard	◆ L68
150 m (492 ft), standard with M12 plugs fitted	◆ L71
150 m (492 ft), standard	◆ L72
Additional data	
Please add " -Z " to Order No. and specify Order code(s) and plain text.	
Tag name	
Tag name plate, stainless steel	Y17
Transmitter setup	
Custom transmitter setup	Y20
Customer specific calibration	
Customer specific calibration (5 flow x 2 points)	Y61
Customer specific calibration (10 flow x 1 point)	Y62
◆ Short lead time (details in PMD)	
Operating instructions for SITRANS FC430	
Description	Order No.
• English	A5E03361511
• German	A5E03651143
• Spanish	A5E03651152
• French	A5E03651188
• Italian	A5E03651190
• Chinese	A5E03922773
This device is shipped with a Quick Start guide and a CD containing further SITRANS F C literature.	
All literature is also available for free at: http://www.siemens.com/flowdocumentation	

Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

Overview



The flow measuring principle is based on the Coriolis Effect. The SITRANS FC430 flowmeter consists of a sensor type FCS400 and a transmitter FCT030. The FCS400 sensor's measuring tubes are energized by an electro-mechanical driver circuit which oscillates them at their resonance frequency.

Two pick-ups are placed symmetrically upstream and downstream of the central driver. When a process fluid passes through the sensor, the Coriolis Effect will act on the vibrating tubes and cause deflection which can be measured as a phase shift between pick-ups 1 and 2. The phase shift is proportional to the mass flow rate.

The amplitude of the driver is automatically regulated to ensure a stable output from both of the pickups.

The temperatures of the sensor tubes and frame are measured with high precision to provide compensation for changes with temperature in the measuring properties.

The sensor signals are analyzed for flow, density and fluid temperature in the sensor front end. The digital signal is controlled to conform to high Safety Integrated Level (SIL) and sent digitally to the transmitter via standard cable. The transmitter further calculates total mass and volume, fraction, dosing control and many other functions.

The front-end module has a process noise filter, which can be used to improve the meter's performance when installation and application conditions are not ideal. Typical interferences from process conditions such as pump pulsations, mechanical vibrations, oscillating valves can be reduced considerably.

Fraction

The sensor FCS400 can be calibrated at works to measure and report various fraction concentrations of two-part mixtures or solutions. Where a discrete relationship exists between concentration and density at particular temperatures a calculation is performed and the percentage concentration by volume or mass of Part A or Part B (100% minus Part A) is measured. For solutions and some mixtures the total mass, or dry weight, is also available.

In some industries, a selection of standard density scales has been adopted to represent the density or relative density of the process fluid.

At ordering the following fraction or standard density scales can be specified:

- API number
- Balling
- °Baumé light
- °Baumé heavy
- °Brix
- °Oeschlé
- °Plato
- Specific Gravity
- °Twaddell
- %HFCS42
- %HFCS55
- %HFCS90

Integration

The SITRANS FCS400 Massflow sensor is suitable for both indoor and outdoor installation and meets the requirements of Protection Class IP67/NEMA 4X. Optionally the sensor can be supplied with hazardous certification to Class 1 Zone 1 (ATEX, IEC Ex) or Class 1 Div. 1 (FM).

The flowmeter is bidirectional and can be installed in any orientation. The sensor is self-draining in many positions, with vertical mounting preferred.

It is important to ensure that the sensor tubes are always completely filled with homogeneous fluid; otherwise measuring errors may occur. Suitable fluids are clean liquids, pastes, light slurries or gases. Condensing vapours, aerated liquids or slush are not recommended.

The materials in contact with the process medium must be evaluated for corrosion and erosion resistances for long sensor life.

The pressure drop through the sensor is a function of the properties of the fluid and the flow rate. A pressure loss and accuracy calculator can be found on the Siemens Internet site <http://www.siemens.com/.....>

The preferred flow direction is indicated by an arrow on the sensor. Flow in the direction of the arrow will be measured as positive. The sense of the flow can be adjusted at the transmitter to compensate for reverse installation.

Installation orientation

The optimal installation orientation is vertical with the flow upwards. This ensures that suspended solids or bubbles are completely pushed through the sensor. A drain valve below the sensor will allow the pipe and sensor to drain completely.

Supports

In order to support the weight of the flowmeter and to ensure reliable measurements when external effects exist (e.g. plant vibrations), the sensor should be installed in rigidly supported pipelines.

Supports or hangers should be installed symmetrically and stress-free in close proximity to both of the process connections.

Shut-off devices

To conduct a system zero adjustment, secure shut-off devices are required in the pipeline.

Where possible, shut-off devices should be installed both upstream and downstream of the flowmeter.

System design

- The sensor design consists of process connections, inlet and outlet manifolds mounted in a stiff frame and two parallel tubes equally sharing the process medium flow. The meter is protected in a pressure-rated stainless steel enclosure with two purge ports to support a pressure guard in non-Ex applications.
- The sensing tubes are curved in the CompactCurve shape which gives high sensitivity and low pressure loss. The CompactCurve shape was selected to ensure that the smallest flows are measured with optimal signal to noise ratio.

- Vibration mode separation creates a controlled measuring environment only within the CompactCurve part of the tubes. As a result the sensor has high immunity to plant vibration while avoiding large mass balancing of the meter components.
- The 15° slope of the CompactCurve shape ensures secure self-draining when the sensor axis is mounted vertically or up to 10° off vertical.
- The sensor frame is designed to conduct plant vibrations directly through the sensor body to adjacent pipeline while providing isolation of the metering section from the vibration. Careful mounting of the pipeline with regard to minimizing vibration at the meter will ensure a secure measurement environment.

Installation guidelines

- The mass flowmeter does not require any flow conditioning or straight inlet pipe sections. Care should be exercised however to ensure that any upstream valves, gates, sight glasses etc. do not cavitate and are not set into vibration by the flow.
- It is always preferred to place the flowmeter upstream of any control valve (what goes in, comes out) or other pipeline component which may cause flashing, cavitation or vibrations.
- The presence of gas bubbles in the fluid may result in erroneous measurements, particularly in the density measurement. Therefore the flowmeter should not be installed at the highest point in the liquid piping system or where vapour can collect. Install the meter low in pipeline sections to maintain system pressure and compress any bubbles.
- Drop lines downstream from the flow sensor should be avoided to prevent the meter tube from draining during flowing conditions. A back-pressure device or orifice is recommended to ensure that flow does not separate within the flow sensor but the metering section remains at positive pressure at all times while there is flow.
- The flowmeter should not come into contact with any other objects. Avoid making attachments to the housing except for the pressure guard components (if required).
- When the connecting pipeline is larger than the sensor size, suitable standard reducers may be installed. A selection of oversize and undersize connections can be ordered - refer to the sizes tables below.
- If strong vibrations exist in the pipeline, they should be damped using elastic pipeline elements. The damping devices must be installed outside the supported flowmeter section. Direct connection of flexible elements to the sensor should be avoided.
- Make sure that any dissolved gases, which are present in many liquids, do not outgas. The back pressure at the outlet should be at least 0.2 bar (3 psi) above the vapour pressure of the process fluid.
- Assure that operation below the vapour pressure cannot occur particularly for fluids with low latent heat of vaporisation.
- The sensor should not be installed in the vicinity of strong electromagnetic fields, e.g. near motors, pumps, variable frequency drives, transformers etc.
- When operating meters on a common mounting base the sensors should be mounted and spaced separate from each other to avoid cross-talk and other vibration interferences.
- When operating meters in interconnected pipelines the pipes should be decoupled to prevent cross talk.

Remote system cabling

The system is designed so that standard instrumentation cable with four cores and overall screen or two screened pairs can be used, or cable sets can be ordered with the flowmeter. The cable can be ordered in various set lengths and terminated in the field.

The maximum design length for the sensor cable is 200 m (656.17 ft). Data transmission speed and process variable up-

date rates may be affected by the cable characteristics. For best results, choose a cable with the following electrical characteristics:

Property	Unit	Value
Resistance	[Ω/km]	59
Characteristic impedance	[Ω]	100 @ 1 MHz
Insulation resistance	[MΩ/km]	200
Maximum voltage	[V]	300

The flowmeter system applies maximum 15 V DC in operation and is certified intrinsically safe. The complete system is insulation tested to 1500 V in production.

Cabling solutions which can be ordered with the flowmeter are as follows:

1. High performance plugged cable using M12 plugs into prepared sockets
2. Cable glands for either metric or NPT threaded terminal housings.
3. Plain cable in set lengths to be passed through flexible and rigid conduit (not supplied) for metric or NPT threaded terminal housings

Cable for items 1, 2 and 3 are available either gray for standard applications or light blue for Ex applications to identify the circuit as intrinsically safe.

Insulation and heating

For applications where pipeline insulation is required for personnel protection or process temperature maintenance, the SITRANS FCS400 flow sensor may also be insulated. The form and material of insulation is not prescribed and entirely depends on the practices at the application location or plant.

Insulation must not be crowded around the sensor pedestal but shaped at a 45° cone to allow the pedestal to radiate excess heat and maintain a suitable working temperature within the front-end housing.

Where trace heating is employed, an electric heating jacket can be ordered as an accessory. It is shaped to the sensor body and controlled from a weatherproof setpoint device.

The jacket can heat the sensor enclosure up to 200 °C (392 °F). However further insulation is also recommended for personnel protection or low loss temperature maintenance.

Calibration

To ensure accurate measurement all flowmeters must be initially calibrated. The calibration of each SITRANS FCS400 coriolis sensor is conducted at SIEMENS flow facilities accredited according to ISO/IEC 17025 by DANAK. A calibration certificate is shipped with every sensor and calibration data are stored in the SensorFlash memory unit. The accreditation body DANAK has signed the ILAC MRA agreement (International Laboratory Accreditation Corporation - Mutual Recognition Arrangement). Therefore the accreditation ensures international traceability and recognition of the test results in 39 countries worldwide, including the US (NIST traceability).

Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

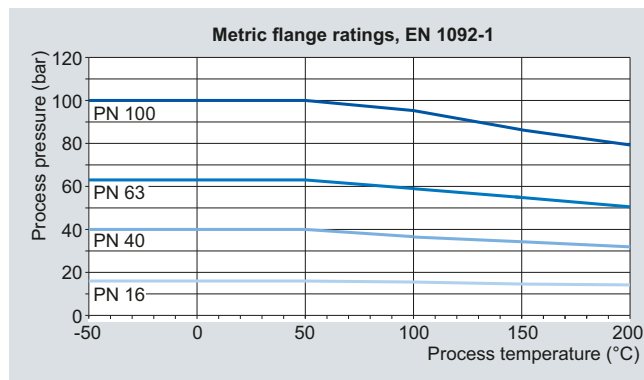
Technical specifications

Flow sensor FCS400		
Parameter	Unit	Value
Process pressure range	[barg (psi)]	0 ... 100 (0 ... 1450)
Process temperature range	[°C (°F)]	-50 ... +200 (-58 ... +392)
Ambient temperature range	[°C (°F)]	-40 ... +60 (-40 ... +140)
Transport temperature range	[°C (°F)]	-40 ... +70 (-40 ... +158)
Density range	[kg/m ³ (lb/ft ³)]	1 ... 5000 (0.062 ... 312.2)
Process media	Fluid group	1 (suitable for dangerous fluids)
	Form	Light slurry, liquid and non-condensing gas
No. of process values		
• Primary process values		<ul style="list-style-type: none"> • Mass flow • Density • Process medium temperature
• Derived process values		<ul style="list-style-type: none"> • Volume flow • Corrected volume flow (with reference density) • Fraction A:B • Fraction % A:B

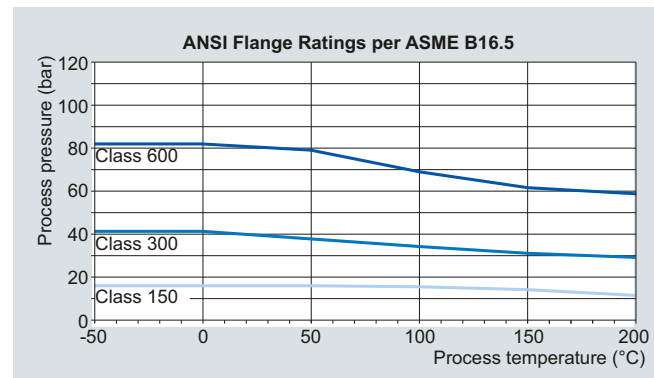
Performance specifications		Sensor			
Parameter	Unit	DN 15	DN 25	DN 50	DN 80
Max. zero point error	[kg/h (lb/min)]	0.2 (0.007)	2.0 (0.072)	7.5 (0.276)	9 (0.33)
Qmin	[kg/h (lb/min)]	20 (0.735)	200 (7.35)	750 (27.6)	900 (33.1)
Qnom	[kg/h (lb/min)]	3 700 (136.0)	11 500 (422.6)	52 000 (1 911)	136 000 (4 997)
Qmax	[kg/h (lb/min)]	31 900 (1 172)	88 400 (3 248)	353 500 (12 990)	904 800 (33 246)
Linearity error	[%]	± 0.1	± 0.1	± 0.1	± 0.1
Repeatability	[%]	± 0.05	± 0.05	± 0.05	± 0.05
Density error	[kg/m ³ (lb/ft ³)]	± 5 (± 0.31)	± 5 (± 0.31)	± 5 (± 0.31)	± 5 (± 0.31)
Extended density calibration	[kg/m ³ (lb/ft ³)]	± 1 (± 0.062)	± 1 (± 0.062)	± 1 (± 0.062)	± 1 (± 0.062)
Temperature error	[°C (°F)]	± 0.5 (± 0.9)	± 0.5 (± 0.9)	± 0.5 (± 0.9)	± 0.5 (± 0.9)

Pressure/temperature curves

With two major exceptions, the pressure rating of the flow sensors is independent of the process medium temperature. Design rules for flange connections in both the EN1092-1 and ASME B16.5 standards dictate pressure derating with increasing temperature. The charts below show the effect of process medium temperature on the pressure ratings for the flanges within the FCS400 product program.



EN1092-1 flanged sensors



ASME B16.5 flanged sensors

Sensor variants

SITRANS FCS400 sensors are available in three main variants: Standard, hygienic and NAMUR. A wide range of process connections is available for the FCS400 sensors. The available combinations of type, sensor size and connection size are shown in the tables below.

Standard sensors

Sensor	Connection	EN 1092-1 B1, PN 16	EN 1092-1 B1, PN 40	EN 1092-1 B1, PN 63	EN 1092-1 B1, PN 100	EN 1092-1 D Nut, PN 40	EN 1092-1 D Nut, PN 63	EN 1092-1 D Nut, PN 100	ANSI B16.5-2009, class 150	ANSI B16.5-2009, class 300	ANSI B16.5-2009, class 600	ISO 228-1 G pipe thread	ASME B1.20.1 NPT pipe thread	DIN 11851 Hygienic screwed	DIN 32676 Hygienic Tri-clamp	DIN 11864-1 Aseptic screwed	DIN 11864-2 Aseptic flanged	ISO 2852 Hygienic clamped	ISO 2853 Hygienic screwed	SMS 1145 Hygienic screwed	12-VCO-4 Quick connect	JIS B2200:2004/10K	JIS B2200:2004/20K	JIS B2200:2004/40K	
316 Stainless - Standard: 7ME461-...																									
DN 15 (½")	DN 6 (¼")											o	o												
	DN 10 (¾")													•											
	DN 15 (½")	o	•	o	•	o	o	o	•	o	•	•	•	•	•	•	o			o	•	o	o	o	
	DN 20 (¾")								•	o	•				•										
	DN 25 (1")	o	•		•										•				•	•					
DN 25 (1")	DN 15 (½")																								
	DN 25 (1")	o	•	o	•	o	o	o	•	•	•	•	•	•	•	•	o	•	•	o		o	o	o	
	DN 32 (1¼")													•											
DN 50 (2")	DN 40 (1½")	o	•	o	•	o	o	o							•		•	•	•	o					
	DN 50 (2")	o	•	o	•	o	o	o	•	o	•	•	•	•	•	•	o	•	•	•	o		o	o	o
	DN 65 (2½")																								
	DN 80 (3")	o	•	o	•				•	o	•				•										
DN 80 (3")	DN 50 (2")																								
	DN 65 (2½")	o	•	o	•				•	o	•				•										
	DN 80 (3")	o	•	o	•	o	o	o	•	o	•			•	•	•	o	•	•	o		o	o	o	
	DN 100 (4")	o	•	o	•																				

- Combinations shown **•** are Mainstream products with delivery time of up to 15 days depending on the combination and production stock levels.
- Combinations shown **o** are Sidestream products with delivery from 45 to 90 days. Not all components are held in production stock for Sidestream products.

Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

Hygienic sensor variants

The hygienic sensors all have maximum internal surface roughness < 0.8 µm and are EHEDG and 3A approved. Hygienic sensors are offered with process connection conforming to various international quick-connect clamps or threaded connectors. Pressure ratings are according to the relevant standard and the sensor size. Maximum pressure in the hygienic program is PN 40.

Sensor	Connection	DIN 11851 0.8 µm screwed	DIN 32676 0.8 µm Tri-clamp	DIN 11864-1 0.8 µm screwed	DIN 11864-2 0.8 µm flanged	ISO 2852 0.8 µm clamped	ISO 2853 0.8 µm screwed
316 SS - Hygienic: 7ME462.-...							
DN 15 (½")	DN 6 (¼")						
	DN 10 (⅜")	●					
	DN 15 (½")	●	●	●	●		
	DN 20 (¾")		●				
	DN 25 (1")	●				●	●
DN 25 (1")	DN 15 (½")						
	DN 25 (1")	●	●	●	●	●	●
	DN 32 (1¼")	●					
	DN 40 (1½")		●			●	●
DN 50 (2")	DN 25 (1")						
	DN 40 (1½")	●		●	●	●	●
	DN 50 (2")	●	●	●	●	●	●
	DN 65 (2½")						
DN 80 (3")	DN 50 (2")						
	DN 65 (2½")	●					
	DN 80 (3")	●	●	●	●	●	●
	DN 100 (4")						

- Combinations shown ● are Mainstream products with delivery time of up to 15 days depending on the combination and production stock levels.
- Combinations shown ○ are Sidestream products with delivery from 45 to 90 days. Not all components are held in production stock for Sidestream products.

NAMUR sensor variants

The NAMUR variants have build-in lengths according to NAMUR recommendation NE 132. The recommendations of NE 132 are stated for sensors with flanges the same size as the sensor nominal size, and for flanges to EN1092-1 PN 40 with B1 flange facing. For couplings of other standards such as ASME B16.5 Class 150, the overall length incorporates the difference in length between standard EN and ASME flanges. NAMUR variants are offered with flange and pipe thread connections according to EN, ISO and ASME standards, as shown in the table below.

Sensor	Connection	EN 1092-1 B1, PN 16	EN 1092-1 B1, PN 40	EN 1092-1 B1, PN 63	EN 1092-1 B1, PN 100	EN 1092-1 D Nut, PN 40	EN 1092-1 D Nut, PN 63	EN 1092-1 D Nut, PN 100	ANSI B16.5-2009, class 150	ANSI B16.5-2009, class 300	ANSI B16.5-2009, class 600	ISO 228-1 G pipe thread	ASME B1.20.1 NPT pipe thread	DIN 11851 Hygienic screwed	DIN 32676 Hygienic Tri-clamp	DIN 11864-1 Aseptic screwed	DIN 11864-2 Aseptic flanged	ISO 2852 Hygienic clamped	ISO 2853 Hygienic screwed
316 Stainless - NAMUR: 7ME471-...																			
DN 15 (½")	DN 6 (¼")																		
	DN 10 (⅜")													○					
	DN 15 (½")	○	●	○	●	○	○	○	●	○	●	●	●	○	○	○	○		
	DN 20 (¾")								○	○	○				○				
	DN 25 (1")	○	○		○										○			○	○
DN 25 (1")	DN 15 (½")																		
	DN 25 (1")	○	●	○	●	○	○	○	●	○	●	●	●	○	○	○	○	○	○
	DN 32 (1¼")													○					
DN 50 (2")	DN 40 (1½")	○	○	○	○	○	○	○											
	DN 50 (2")	○	●	○	●	○	○	○	●	○	●	●	●	○	○	○	○	○	○
	DN 65 (2½")																		
DN 80 (3")	DN 50 (2")																		
	DN 65 (2½")	○	○	○	○				○	○	○			○					
	DN 80 (3")	○	●	○	●	○	○	○	●	○	●	●	●	○	○	○	○	○	○
	DN 100 (4")	○	○	○	○														

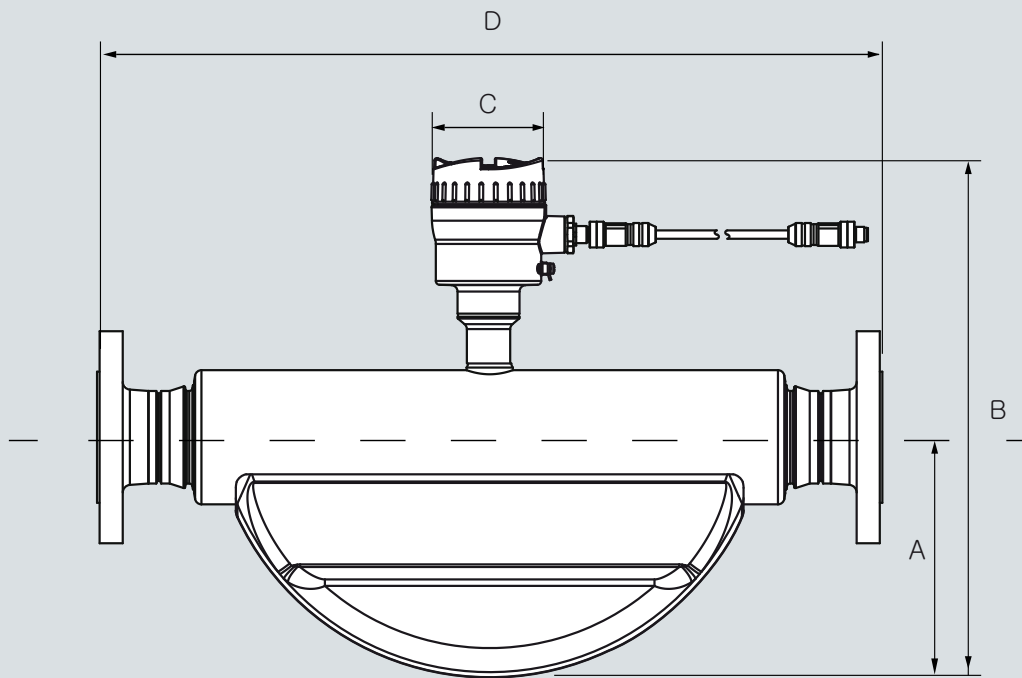
- Combinations shown ● are Mainstream products with delivery time of up to 15 days depending on the combination and production stock levels.
- Combinations shown ○ are Sidestream products with delivery from 45 to 90 days. Not all components are held in production stock for Sidestream products.

Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

Dimensional drawings



Sensor [DN]	[inch]	A		B		C		Weight	
		[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[kg]	[lbs]
15	½	90	3.54	280	11.02	90	3.54	4.6	10.14
25	1	115	4.53	315	12.40	90	3.54	7.9	17.42
50	2	180	7.09	390	15.35	90	3.54	15	33.07
80	3	294	11.57	424	16.69	90	3.54	53	116.84

SITRANS FCS400, dimensions in mm (inch), weights in kg (lbs), for a EN 1092 PN 40 flanged version.

The build-in length D depends on the flange.

Overall length

The overall length (build-in length) of each sensor depends on the connection standard and the pressure rating. The tables below summarize the dimensions available at the time of publishing. Please contact Siemens for further information about our desired process connection specification.

316L stainless - Standard: 7ME461.-...

Sensor	DN 15 (½")					DN 25 (1")			DN 50 (2")		DN 80 (3")		
	DN 6 (¼")	DN 10 (3/8")	DN 15 (½")	DN 20 (¾")	DN 25 (1")	DN 25 (1")	DN 32 (1¼")	DN 40 (1½")	DN 40 (1½")	DN 50 (2")	DN 65 (2½")	DN 80 (3")	DN 100 (4")
EN1092-1 B1, PN 16			265		265	360			610	610	915	840	840
EN1092-1 B1, PN 40			265		265	360		365	610	610	915	840	840
EN1092-1 B1, PN 63			265			360			610	610	915	915	915
EN1092-1 B1, PN 100			270		275	360			610	610	915	915	915
ANSI B16.5, class 150			270	270		360		365		620	915	875	
ANSI B16.5, class 300			270	270		360		380		620	915	875	
ANSI B16.5, class 600			270	285		360		380		620	915	875	
ISO 228-1 GH pipe thread	265		265			365				620			
ANSI B1.20.1 NPT pipe thread	265		270			365				620			
DIN 11851 Hygienic screwed		265	265		193	360	360		610	610	840	840	
DIN 32676-C Hygienic clamp			265	265		360		360		610		875	
DIN 11864-1 Aseptic screwed			265	265		360				610		875	
DIN 11864-2 Aseptic flange			265	265		360		274	620	610		875	
ISO 2852 Hygienic clamp					265	360			610	610		840	
ISO 2853 Hygienic screwed			265			360		274		610		860	

SITRANS FCS400, overall length, dimensions in mm

Sensor	DN 15 (½")					DN 25 (1")			DN 50 (2")		DN 80 (3")		
	DN 6 (¼")	DN 10 (3/8")	DN 15 (½")	DN 20 (¾")	DN 25 (1")	DN 25 (1")	DN 32 (1¼")	DN 40 (1½")	DN 40 (1½")	DN 50 (2")	DN 65 (2½")	DN 80 (3")	DN 100 (4")
EN1092-1 B1, PN 16			10.43		10.43	14.17			24.02	24.02	36.02	33.07	33.07
EN1092-1 B1, PN 40			10.43		10.43	14.17		14.37	24.02	24.02	36.02	33.07	33.07
EN1092-1 B1, PN 63			10.43			14.17			24.02	24.02	36.02	36.02	36.02
EN1092-1 B1, PN 100			10.63		10.83	14.17			24.02	24.02	36.02	36.02	36.02
ANSI B16.5, class 150			10.63	10.63		14.17		14.37		24.41	36.02	34.45	
ANSI B16.5, class 300			10.63	10.63		14.17		14.96		24.41	36.02	34.45	
ANSI B16.5, class 600			10.63	11.22		14.17		14.96		24.41	36.02	34.45	
ISO 228-1 GH pipe thread	10.43		10.43			14.37				24.41			
ANSI B1.20.1 NPT pipe thread	10.43		10.63			14.37				24.41			
DIN 11851 Hygienic screwed		10.43	10.43		7.60	14.17	14.17		24.02	24.02	33.07	33.07	
DIN 32676-C Hygienic clamp			10.43	10.43		14.17		14.17		24.02		34.45	
DIN 11864-1 Aseptic screwed			10.43	10.43		14.17				24.02		34.45	
DIN 11864-2 Aseptic flange			10.43	10.43		14.17		10.78	24.41	24.02		34.45	
ISO 2852 Hygienic clamp					10.43	14.17			24.02	24.02		33.07	
ISO 2853 Hygienic screwed			10.43			14.17		10.78		24.02		33.86	

SITRANS FCS400, overall length, dimensions in inch

Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

316L stainless - Hygienic 0.8 µm: 7ME462.-...

Sensor	DN 15 (½")				DN 25 (1")			DN 50 (2")		DN 80 (3")	
	DN 10 (3/8")	DN 15 (½")	DN 20 (¾")	DN 25 (1")	DN 25 (1")	DN 32 (1¼")	DN 40 (1½")	DN 40 (1½")	DN 50 (2")	DN 65 (2½")	DN 80 (3")
DIN 11851 Hygienic screwed	265	265			360	360		610	610	840	840
DIN 32676-C Hygienic clamp		265	265		360		360		610		875
DIN 11864-1 Aseptic screwed		265			360				610		875
DIN 11864-2 Aseptic flange		265			360			620	610		875
ISO 2852 Hygienic clamp				265	360			610	610		840
ISO 2853 Hygienic screwed				265	360				610		860

SITRANS FCS400, overall length, dimensions in mm

Sensor	DN 15 (½")				DN 25 (1")			DN 50 (2")		DN 80 (3")	
	DN 10 (3/8")	DN 15 (½")	DN 20 (¾")	DN 25 (1")	DN 25 (1")	DN 32 (1¼")	DN 40 (1½")	DN 40 (1½")	DN 50 (2")	DN 65 (2½")	DN 80 (3")
DIN 11851 Hygienic screwed	10.43	10.43		7.60	14.17	14.17		24.20	24.20	33.07	33.07
DIN 32676-C Hygienic clamp		10.43	10.43		14.17		14.17		24.20		34.45
DIN 11864-1 Aseptic screwed		10.43			14.17				24.20		34.45
DIN 11864-2 Aseptic flange		10.43			14.17			24.41	24.20		34.45
ISO 2852 Hygienic clamp				10.43	14.17			24.20	24.20		33.07
ISO 2853 Hygienic screwed				10.43	14.17				24.20		33.86

SITRANS FCS400, overall length, dimensions in inch

316L stainless - NAMUR: 7ME471.-...

Sensor	DN 15 (½")					DN 25 (1")			DN 50 (2")		DN 80 (3")		
	DN 6 (¼")	DN 10 (3/8")	DN 15 (½")	DN 20 (¾")	DN 25 (1")	DN 25 (1")	DN 32 (1¼")	DN 40 (1½")	DN 40 (1½")	DN 50 (2")	DN 65 (2½")	DN 80 (3")	DN 100 (4")
EN1092-1 B1, PN 16			510		510	600			715	715	915	915	915
EN1092-1 B1, PN 40			510		510	600			715	715	915	915	915
EN1092-1 B1, PN 63			510			600			715	715	915	915	915
EN1092-1 B1, PN 100						600			715	715	915	915	915
EN1092-1 D, PN 16			510			600			715	715		915	
EN1092-1 D, PN 40			510			600			715	715		915	
EN1092-1 D, PN 63						600			715	715		915	
ANSI B16.5, class 150						600					915		
ANSI B16.5, class 300						600					915		
ANSI B16.5, class 600						600					915		
ISO 228-1 GH pipe thread	510		510										
ANSI B1.20.1 NPT pipe thread	510												
DIN 11851 Hygienic screwed		510	510			600	600		715	715	915	915	
DIN 32676-C Hygienic clamp			510	510		600	600		715				
DIN 11864-1 Aseptic screwed			510			600			715				
DIN 11864-2 Aseptic flange													
ISO 2852 Hygienic clamp					510	600			715	715		915	
ISO 2853 Hygienic screwed					510	600			715				

SITRANS FCS400, overall length, dimensions in mm

Sensor	DN 15 (½")					DN 25 (1")			DN 50 (2")		DN 80 (3")		
	DN 6 (¼")	DN 10 (3/8")	DN 15 (½")	DN 20 (¾")	DN 25 (1")	DN 25 (1")	DN 32 (1¼")	DN 40 (1½")	DN 40 (1½")	DN 50 (2")	DN 65 (2½")	DN 80 (3")	DN 100 (4")
EN1091-1 B1, PN 16			20.08		20.08	23.62			28.15	28.15	36.02	36.02	36.02
EN1091-1 B1, PN 40			20.08		20.08	23.62			28.15	28.15	36.02	36.02	36.02
EN1091-1 B1, PN 63			20.08			23.62			28.15	28.15	36.02	36.02	36.02
EN1091-1 B1, PN 100						23.62			28.15	28.15	36.02	36.02	36.02
EN1092-1 D, PN 16			20.08			23.62			28.15	28.15		36.02	
EN1092-1 D, PN 40			20.08			23.62			28.15	28.15		36.02	
EN1092-1 D, PN 63						23.62			28.15	28.15		36.02	
ANSI B16.5, class 150						23.62					36.02		
ANSI B16.5, class 300						23.62					36.02		
ANSI B16.5, class 600						23.62					36.02		
ISO 228-1 GH pipe thread	20.08		20.08										
ANSI B1.20.1 NPT pipe thread	20.08												
DIN 11851 Hygienic screwed		20.08	20.08			23.62	23.62		28.15	28.15	36.02	36.02	
DIN 32676-C Hygienic clamp			20.08	20.08		23.62	23.62		28.15				
DIN 11864-1 Aseptic screwed			20.08			23.62			28.15				
DIN 11864-2 Aseptic flange													
ISO 2852 Hygienic clamp					20.08	23.62			28.15	28.15		36.02	
ISO 2853 Hygienic screwed					20.08	23.62			28.15				

SITRANS FCS400, overall length, dimensions in inch

Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

Selection and Ordering data

	Order No.	Ord. code
SITRANS FCS400 Standard Flow sensor with hygienic and flange/pipe thread connections for SITRANS FC430 Digital coriolis flowmeter	7ME4610-	
Replacement sensor FCS400 ordered with or without a DSL according to service requirements. For compact or remote mounting with FCT030 transmitter		
Sensor size, connection size		
DN 15, DN 10 (½", 3/8"), Q _{nom} = 3 700 m³/h	3 F	
DN 15, DN 15 (½", ½")	3 G	
DN 15, DN 20 (½", ¾")	3 H	
DN 15, DN 25 (½", 1")	3 J	
DN 25, DN 15 (1", ½"), Q _{nom} = 11 500 m³/h	3 K	
DN 25, DN 25 (1", 1")	3 L	
DN 25, DN 40 (1", 1½")	3 N	
DN 50, DN 40 (2", 1½"), Q _{nom} = 52 000 m³/h	4 B	
DN 50, DN 50 (2", 2")	4 C	
DN 80, DN 65 (3", 2½"), Q _{nom} = 136 000 m³/h	4 J	
DN 80, DN 80 (3", 3")	4 K	
DN 80, DN 100 (3", 4")	4 L	
Process connection		
EN1092-1 B1, PN 16	A 0	
EN1092-1 B1, PN 40	A 1	
EN1092-1 B1, PN 63	A 2	
EN1092-1 B1, PN 100	A 3	
EN1092-1 D nUT, PN 40	A 5	
EN1092-1 D nUT, PN 63	A 6	
EN1092-1 D nUT, PN 100	A 7	
ANSI B16.5-2009, class 150	D 1	
ANSI B16.5-2009, class 300	D 2	
ANSI B16.5-2009, class 600	D 3	
ISO228-1 G pipe thread	E 1	
ASME B1.20.1 NPT pipe thread	E 3	
DIN 11851 hygienic screwed	F 1	
DIN32676 hygienic Tri-Clamp	G 1	
DIN11864-1 aseptic screwed	H 1	
DIN11864-2 aseptic flanged	H 2	
ISO 2852 hygienic clamped	J 1	
ISO 2853 hygienic screwed	J 5	
SMS 1145 hygienic screwed	K 1	
12-VCO-4 quick connect	K 5	
JIS B2200:2004/10K	L 2	
JIS B2220:2004/20K	L 4	
JIS B2220:2004/40K	L 6	
Wetted parts material		
AISI 316L/W1.4435/W1.4404 (100 barg max.)	1	
Calibration/Accuracy class		
0,1 % flow, 5 kg/m³ density	1	
0,1 % flow, 1 kg/m³ density	4	
Standard fraction calibration		
• API number	9	N 0 A
• Balling	9	N 0 B
• °Baumé light	9	N 0 C
• °Baumé heavy	9	N 0 D
• °Brix	9	N 0 E
• °Oeschlé	9	N 0 F
• °Plato	9	N 0 G
• Specific Gravity	9	N 0 H
• °Twaddell	9	N 0 J
• %HFCS42	9	N 0 K
• %HFCS55	9	N 0 L
• %HFCS90	9	N 0 M

Selection and Ordering data

	Order No.	Ord. code
SITRANS FCS400 Standard Flow sensor with hygienic and flange/pipe thread connections for SITRANS FC430 Digital coriolis flowmeter	7ME4610-	
Replacement sensor FCS400 ordered with or without a DSL according to service requirements. For compact or remote mounting with FCT030 transmitter		
Transmitter/DSL material & mounting style		
None		A
DSL, IP67, aluminum, M12		N
DSL, IP67, aluminum, M12, T/Box		Q
Ex approval		
Non-Ex	◆	A
ATEX II 2GD	◆	C
IECEx GDb	◆	F
FM/CSA/UL Class 1, Div 1	◆	H
Local User Interface		
None	◆	0
◆ Short lead time (details in PMD)		

Selection and Ordering data

	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Cable glands	
None	◆ A 00
Metric, no glands	◆ A 01
Metric, plastic	◆ A 02
Metric, brass/Ni plated	◆ A 05
Metric, stainless steel	◆ A 06
NPT, no glands	◆ A 11
NPT, Plastic	◆ A 12
NPT, brass/Ni plated	◆ A 15
NPT, stainless steel	◆ A 16
Software functions and CT approvals	
None	◆ B 10
I/O configuration Ch1	
None	◆ E 00
I/O configuration Ch2, Ch3 and Ch4	
None	F 00
The MLFB structure for FC430 systems must be filled to this level , including "-Z" options A., B., E. and F..	

Selection and Ordering data	Order code
Add-on options and accessories	
Please add "-Z" to Order No. and specify Order code(s).	
Certificates	
Pressure test certificate CRN	◆ C01
Pressure test certificate PED	◆ C02
Material certificate EN 10204-3.1	◆ C05
Welding inspection report	C07
Factory certificate to EN 10204 2.1	◆ C10
Factory certificate to EN 10204 2.2	◆ C11
Cable	
5 m (16.4 ft), standard with M12 plugs fitted	◆ L51
5 m (16.4 ft), standard	◆ L52
10 m (32.8 ft) standard with M12 plugs fitted	◆ L55
10 m (32.8 ft), standard	◆ L56
25 m (82 ft), standard with M12 plugs fitted	◆ L59
25 m (82 ft), standard	◆ L60
50 m (164 ft), standard with M12 plugs fitted	◆ L63
50 m (164 ft), standard	◆ L64
75 m (246 ft), standard with M12 plugs fitted	◆ L67
75 m (246 ft), standard	◆ L68
150 m (492 ft), standard with M12 plugs fitted	◆ L71
150 m (492 ft), standard	◆ L72
Additional data	
Please add "-Z" to Order No. and specify Order code(s) and plain text.	
Tag name	
Tag name plate, stainless steel	Y17
Customer specific calibration	
Customer specific calibration (5 flow x 2 points)	Y61
Customer specific calibration (10 flow x 1 point)	Y62
◆ Short lead time (details in PMD)	

Operating instructions for SITRANS FC430

Description	Order No.
• English	A5E03361511
• German	A5E03651143
• Spanish	A5E03651152
• French	A5E03651188
• Italian	A5E03651190
• Chinese	A5E03922773

This device is shipped with a Quick Start guide and a CD containing further SITRANS F C literature.

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Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

Selection and Ordering data

Selection and Ordering data	Order No.	Ord. code
SITRANS FCS400 Flow sensor Hygienic version with Ra < 0.8 µm. EHEDG and 3A approved for SITRANS FC430 Digital coriolis flowmeter	7ME4620-	
Replacement sensor ordered with or without a DSL according to service requirements. For compact or remote mounting with FCT030 transmitter		
Sensor size, connection size		
DN 15, DN 10 (½", 3/8")	3 F	
DN 15, DN 15 (½", ½")	3 G	
DN 15, DN 20 (½", ¾")	3 H	
DN 15, DN 25 (½", 1")	3 J	
DN 25, DN 25 (1", 1")	3 L	
DN 25, DN 25 (1", 1¼")	3 M	
DN 25, DN 40 (1", 1½")	3 N	
DN 50, DN 40 (2", 1½")	4 B	
DN 50, DN 50 (2", 2")	4 C	
DN 80, DN 65 (3", 2½")	4 J	
DN 80, DN 80 (3", 3")	4 K	
Process connection		
DIN 11851 0,8 µm screwed	F 1	
DIN 32676 0,8 µm Tri-Clamp	G 1	
DIN 11864-1 0,8 µm screwed	H 1	
DIN 11864-2 0,8 µm flanged	H 2	
ISO 2852 0,8 µm clamped	J 1	
ISO 2853 0,8 µm screwed	J 5	
Wetted parts material		
ISO228-1 G pipe thread	1	
Calibration/Accuracy class		
0,1 % flow, 5 kg/m³ density	1	
0,1 % flow, 1 kg/m³ density	4	
Standard fraction calibration		
• API number	9	N 0 A
• Balling	9	N 0 B
• °Baumé light	9	N 0 C
• °Baumé heavy	9	N 0 D
• °Brix	9	N 0 E
• °Oeschlé	9	N 0 F
• °Plato	9	N 0 G
• Specific Gravity	9	N 0 H
• °Twaddell	9	N 0 J
• %HFCS42	9	N 0 K
• %HFCS55	9	N 0 L
• %HFCS90	9	N 0 M
Transmitter/DSL material and mounting style		
None		A
DSL, IP67, aluminum, M12		N
DSL, IP67, aluminum, M12, T/Box		Q
Ex approval		
Non-Ex		A
ATEX II 2GD		C
IECEX GDb		F
FM/CSA/UL Class 1, Div 1		H
Local User Interface		
None		0

◆ Short lead time (details in PMD)

Selection and Ordering data

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Cable glands	
None	◆ A00
Metric, no glands	◆ A01
Metric, plastic	◆ A02
Metric, brass/Ni plated	◆ A05
Metric, stainless steel	◆ A06
NPT, no glands	◆ A11
NPT, plastic	◆ A12
NPT, brass/Ni plated	◆ A15
NPT, stainless steel	◆ A16
Software functions and CT approvals	
None	◆ B10
I/O configuration Ch1	
None	◆ E00
I/O configuration Ch2, Ch3 and Ch4	
None	F00
The MLFB structure for FC430 systems must be filled to this level , including "-Z" options A., B., E.. and F..	

Selection and Ordering data		Order code
Add-on options and accessories		
Please add "-Z" to Order No. and specify Order code(s).		
Certificates		
Pressure test certificate CRN	◆	C01
Pressure test certificate PED	◆	C02
Material certificate EN 10204-3.1	◆	C05
Welding inspection report		C07
Factory certificate to EN 10204 2.1	◆	C10
Factory certificate to EN 10204 2.2	◆	C11
Cable		
5 m (16.4 ft), standard with M12 plugs fitted	◆	L51
5 m (16.4 ft), standard	◆	L52
10 m (32.8 ft) standard with M12 plugs fitted	◆	L55
10 m (32.8 ft), standard	◆	L56
25 m (82 ft), standard with M12 plugs fitted	◆	L59
25 m (82 ft), standard	◆	L60
50 m (164 ft), standard with M12 plugs fitted	◆	L63
50 m (164 ft), standard	◆	L64
75 m (246 ft), standard with M12 plugs fitted	◆	L67
75 m (246 ft), standard	◆	L68
150 m (492 ft), standard with M12 plugs fitted	◆	L71
150 m (492 ft), standard	◆	L72
Additional data		
Please add "-Z" to Order No. and specify Order code(s) and plain text.		
Tag name		
Tag name plate, stainless steel		Y17
Customer specific calibration		
Customer specific calibration (5 flow x 2 points)		Y61
Customer specific calibration (10 flow x 1 point)		Y62
◆ Short lead time (details in PMD)		
Operating instructions for SITRANS FC430		
Description	Order No.	
• English	A5E03361511	
• German	A5E03651143	
• Spanish	A5E03651152	
• French	A5E03651188	
• Italian	A5E03651190	
• Chinese	A5E03922773	

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Flow Measurement

SITRANS F C

Flow sensor SITRANS FCS400

Selection and Ordering data	Order No.	Ord. code
SITRANS FCS400 NAMUR compliant flow sensor with flange/pipe thread connections for SITRANS FC430 Digital coriolis flowmeter	7ME4710-	
Replacement sensor ordered with or without a DSL according to service requirements. For compact or remote mounting with FCT030 transmitter		
Sensor size, Connection size		
DN 15, DN 15 (½", ½")	◆ 3G	
DN 25, DN 25 (1", 1")	◆ 3L	
DN 50, DN 50 (2", 2")	◆ 4C	
DN 80, DN 80 (3", 3")	◆ 4K	
Process connection		
EN1092-1 B1, PN 40	◆ A1	
EN1092-1 B1, PN 100	◆ A3	
ANSI B16.5-2009, class 150	◆ D1	
ANSI B16.5-2009, class 600	◆ D3	
ISO228-1 G pipe thread	◆ E1	
ASME B1.20.1 NPT pipe thread	◆ E3	
Wetted parts material		
AISI 316L/W1.4435/W1.4404 (100 barg max.)	◆ 1	
Calibration/Accuracy class		
0,1 % flow, 5 kg/m ³ density	◆ 1	
0,1 % flow, 1 kg/m ³ density	◆ 4	
Standard fraction calibration		
• API number	9	NOA
• Balling	9	NOB
• °Baumé light	9	NOC
• °Baumé heavy	9	NOE
• °Brix	9	NOE
• °Oeschlé	9	NOF
• °Plato	9	NOG
• Specific Gravity	9	NOH
• °Twaddell	9	NOJ
• %HFCS42	9	NOK
• %HFCS55	9	NOL
• %HFCS90	9	NOM
Transmitter/DSL material & mounting style		
None		A
DSL, IP67, aluminum, M12		N
DSL, IP67, aluminum, M12, T/Box		Q
Ex approval		
Non-Ex	◆	A
ATEX II 2GD	◆	C
IECEX GDb	◆	F
FM/CSA/UL Class 1, Div 1	◆	H
Local User Interface		
None	◆	0

◆ Short lead time (details in PMD)

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Cable glands	
None	◆ A00
Metric, no glands	◆ A01
Metric, plastic	◆ A02
Metric, brass/Ni plated	◆ A05
Metric, stainless steel	◆ A06
NPT, no glands	◆ A11
NPT, plastic	◆ A12
NPT, brass/Ni plated	◆ A15
NPT, stainless steel	◆ A16
Software functions and CT approvals	
None	◆ B10
I/O configuration Ch1	
None	◆ E00
I/O configuration Ch2, Ch3 and Ch4	
None	F00
The MLFB structure for FC430 systems must be filled to this level , including "-Z" options A..., B..., E... and F...	

Selection and Ordering data	Order code
Add-on options and accessories	
Please add "-Z" to Order No. and specify Order code(s).	
Certificates	
Pressure test certificate CRN	◆ C01
Pressure test certificate PED	◆ C02
Material certificate EN 10204-3.1	◆ C05
Welding inspection report	C07
Factory certificate to EN 10204 2.1	◆ C10
Factory certificate to EN 10204 2.2	◆ C11
Cable	
5 m (16.4 ft), standard with M12 plugs fitted	◆ L51
5 m (16.4 ft), standard	◆ L52
10 m (32.8 ft) standard with M12 plugs fitted	◆ L55
10 m (32.8 ft), standard	◆ L56
25 m (82 ft), standard with M12 plugs fitted	◆ L59
25 m (82 ft), standard	◆ L60
50 m (164 ft), standard with M12 plugs fitted	◆ L63
50 m (164 ft), standard	◆ L64
75 m (246 ft), standard with M12 plugs fitted	◆ L67
75 m (246 ft), standard	◆ L68
150 m (492 ft), standard with M12 plugs fitted	◆ L71
150 m (492 ft), standard	◆ L72
Additional data	
Please add "-Z" to Order No. and specify Order code(s) and plain text.	
Tag name	
Tag name plate, stainless steel	Y17
Customer specific calibration	
Customer specific calibration (5 flow x 2 points)	Y61
Customer specific calibration (10 flow x 1 point)	Y62
◆ Short lead time (details in PMD)	
Operating instructions for SITRANS FC430	
Description	Order No.
• English	A5E03361511
• German	A5E03651143
• Spanish	A5E03651152
• French	A5E03651188
• Italian	A5E03651190
• Chinese	A5E03922773

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Flow Measurement

SITRANS F C

Transmitter FCT030

Overview



FCT030 is based on the latest developments within digital signal processing technology – engineered for high measuring performance, fast response to step changes in flow, fast dosing applications, high immunity against process noise, easy to install commission and maintain.

The FCT030 transmitter delivers true multi-parameter measurements i.e. massflow, volumeflow, corrected volumeflow, density, temperature and fraction.

The FCT030 IP67 transmitter can be remote connected or compact mounted with all sensors of type FCS400, sizes DN 15 to DN 80.

Application

SITRANS FC430 mass flowmeters are suitable for applications within the entire process industry where there is a demand for accurate flow measurement. The meter is capable of measuring both liquid and gas flow.

Coriolis flowmeters can be applied in all industries, such as:

- Chemical & Pharma: detergents, bulk chemicals, acids, alkalis, pharmaceuticals, blood products, vaccines, insulin production
- Food & Beverage: dairy products, beer, wine, soft drinks, °Brix/°Plato, fruit juices and pulps, bottling, CO₂ dosing, CIP/SIP-liquids, mixture recipe control
- Automotive: fuel injection nozzle & pump testing, filling of AC units, engine consumption
- Oil & Gas: filling of gas bottles, furnace control, test separators
- Hydrocarbon processing: oil refining, derivatives manufacturing, polymerisation
- Water & Waste Water: dosing of chemicals for water treatment

The multiple outputs and bus communication mean that all of the process information can be read either instantaneously (10 ms update) or periodically as plant operation requires.

Benefits

Flow calculation and measurement

- Dedicated mass flow calculation with patented DSP technology
- Fast dosing and flow step response with maximum 10 ms response time.
- 100 Hz update rate to all outputs
- Maximum data age from pickup to output is 20 ms (two update cycles)
- Independent low flow cut-off settings for mass and volume flowrates

- Automatic zero-point adjustment on command
- Empty pipe monitoring

Operation and display

- User-configurable operation display
 - Full graphical display 240 x 160 pixels with up to 6 programmable views
 - Self-explaining alarm handling/log in clear text
 - Help text for all parameters appears automatically in the configuration menu
 - Keypad can be used for controlling dosing as start/stop/hold/reset
- SensorFlash technology stores production specific system documentation and provides removable memory of all flowmeter setups and functions
 - Calibration certificates
 - Pressure and material test certificates (as ordered)
 - Non-volatile memory backup of operational data
 - Transfer of user configuration to other flowmeters

Alarms and safety

- Advanced diagnosis and service menu enhances troubleshooting and meter validation
- Configurable upper and lower alarms and warning limits for all process values
- Alarm handling can be selected between Siemens and NAMUR standard configurations
- Designed from the ground up and certified to integrated safety levels as:
 - SIL 3 for software
 - SIL 2 for hardware and mechanics
 - SIL 3 for a system with redundant hardware
 Unlike many systems which are certified in practice, the SITRANS FC430 system is certified in design, which is a higher qualification and more robust for secure implementation of safety systems.

Outputs and control

- Built-in dosing controller with compensation and monitoring comprising 3 built-in totalizers
- Multi-parameter outputs, individually configurable for massflow, volumeflow, corrected volumeflow, density, temperature or fraction flow such as °Brix or °Plato

Up to four I/O channels are configured as follows:

Channel 1

Channel 1 is 4 to 20 mA analog output with HART 7.2 which can be validated and setup for safety critical applications (SIL 3). The current signal can be configured for massflow, volumeflow or density.

Channel 2

Channel 2 is a signal output which can be freely configured for any process variable.

- Analog current (0/4 to 20 mA)
- 3 stage analog valve dosing control
- Frequency or pulse
- Discrete one or two-valve dosing control in combination with channel 3 or 4
- Operational and alarm status

Channels 3 and 4

Channels 3 and 4 can be ordered with signal (freely configured for any process variable) or relay outputs, or signal input.

Signal

Signal output can be user configured to:

- Analog current (0/4 to 20 mA)
- 3 stage analog valve dosing control
- Frequency or pulse
- Redundant frequency or pulse (linked to Channel 2)
- Discrete one or two-valve dosing control
- Operational and alarm status

Relay

Relay output(s) can be user configured to:

- Discrete one or two-valve dosing control
- Operation status including flow direction
- Alarm status

Signal input

Signal input can be user-configured for

- Dosing control
- Totalizer reset functions
- Force or freeze output(s)

Signal outputs and inputs are individually ordered as active or passive.

During service and maintenance all outputs can be forced to a preset value for simulation, verification or calibration purposes.

Approvals and certificates

The FC430 coriolis flowmeter program was designed from the ground up to comply with or exceed the requirements of international standards and regulations.

Design

The transmitter SITRANS FCT030 is designed in an IP67/NEMA 4X aluminum enclosure with corrosion resistant coating. It can be remote connected or compact mounted with an FCS400 sensor of size DN 15, DN 25, DN 50 or DN 80.

FCT030 is available as standard with 1 current, HART 7.2 output and can be fitted with add-on modules for additional input/output functions.

The transmitter has a modular design with discrete, replaceable electronic modules and connection boards to maintain separation between functions and facilitate field service. All modules are fully traceable and their provenance is included in the transmitter setup.

SensorFlash

SensorFlash is a standard, 1 GByte micro SD card with the ability to be updated by PC. It is supplied with each sensor with the complete set of certification documents including calibration report. Material, pressure test, factory conformance certificates are optional at ordering.

The Siemens SensorFlash memory unit offers the following features and benefits:

- Automatically program any similar transmitter in seconds to the operation standard
- Transmitter replacement in less than 5 minutes
- True "plug & play" provided by integrated cross-checking data consistency and HW/SW version verification
- Permanent database of operational and functional information from the moment that the flowmeter is switched on
- New firmware updates can be downloaded from the SIEMENS internet portal for Product Support and placed onto SensorFlash (unmounted from the transmitter and inserted into a PC's SD card slot). The firmware is then inserted into the existing flowmeter and the complete system upgraded.

Function

The following functions are available:

- Mass flowrate, volume flowrate, density, process temperature, fraction flow
- Up to four output/input channels selected at ordering
- Outputs can be individually configured with mass, volume, density etc.
- 3 built-in totalizers which can count positive, negative or net flows
- Low flow cut-off, adjustable
- Density cut-off or empty pipe cut-off, adjustable
- Flow direction adjustable
- Alarm system consisting of alarm-log, alarm pending menu
- Internal data logger is updated each 10 minutes with operational data such as system health, totalizer values, all configurations and data needed for Custody Transfer requirements to OIML R 117
- Display of operating time with real-time clock. Daylight saving time is not implemented
- Uni/bidirectional flow measurement
- Flowrate outputs are freely configurable between maximum negative and maximum positive flows according to the sensor capacity
- Limit switches programmable for flow, density, temperature or fraction process values. Limit points can be graded as warning and alarm for values both above and below nominal process conditions
- Process noise filter for optimization of measurement performance under non-ideal application conditions. 5-stage pumping filter compensates for flow fluctuations caused by e.g. single acting piston pumps
- Full dosing controller with 5 user-configurable recipes
- Automatic zero adjustment menu, with zero point evaluation display
- Full service menu for effective and straight forward application and meter troubleshooting
- Precise temperature measurement ensures optimum accuracy on massflow, density and fraction flow.
- Fraction flow computation is based on a 5th-order algorithm matching known applications. Users can either select from a list of pre-configured fractions such as °Brix or "Ethanol in water", or order a specific fraction calibration to exactly match the process conditions. All fraction calculations fit within 0.1% of the true value.

Flow Measurement

SITRANS F C

Transmitter FCT030

Technical specifications

Process media	<ul style="list-style-type: none"> Fluid Group 1 (suitable for dangerous fluids) Aggregate state: Paste/light slurry, liquid and gas
Number of process variables	7
Measurement of	<ul style="list-style-type: none"> Mass flow Volume flow Density Process media temperature Corrected volume flow Reference density Fraction A flow Fraction B flow Fraction A % Fraction B %
Current output	
Current	0 ... 20 mA or 4 ... 20 mA (Channel 1 only 4 ... 20 mA)
Load	< 500 Ω per channel
Time constant	0 ... 100 s adjustable
Digital output	
Pulse	41.6 μs ... 5 s pulse duration
Frequency	0 ... 10 kHz, 50 % duty cycle, 120 % overscale provision
Time constant	0 ... 100 s adjustable
Active	0 ... 24 V DC, 110 mA, short-circuit-protected
Passive	3 ... 30 V DC, max. 110 mA
Relay	
Type	Change-over voltage-free relay contact
Load	30 V AC/100 mA
Functions	Alarm level, alarm number, limit, flow direction
Digital input	
Voltage	15 ... 30 V DC (2 ... 15 mA)
Functionality	Start/stop/hold/continue dosing, zero point adjust, reset totalizer 1 and 2, force output, freeze output
Galvanic isolation	All inputs and outputs are galvanically isolated, isolation voltage 500 V.
Cut-off	
Low-flow	0 ... 9.9 % of maximum flow
Limit function	Mass flow, volume flow, fraction, density, sensor temperature
Totalizer	Two eight-digit counters for forward, net or reverse flow
Display	<ul style="list-style-type: none"> Background illumination with alphanumeric text, 3 × 20 characters to indicate flow rate, totalized values, settings and faults. Time constant as current output 1 Reverse flow indicated by negative sign
Zero point adjustment	Via keypad or remote via digital input

Ambient temperature	
Operation	
• Transmitter	-40 ... +60 °C (-40 ... +140 °F), (humidity max. 95 %)
• Display	-20 ... +60 °C (-4 ... +140 °F)
Storage	
• Transmitter	-40 ... +70 °C (-40 ... +158 °F) (Humidity max. 95 %)
• Display	-20 ... +70 °C (-4 ... +158 °F)
Communication	HART 7.2
Enclosure	
Material	Aluminum
Rating	IP67/NEMA 4X to IEC 529 and DIN 40050 (1 mH ₂ O for 30 min.)
Mechanical load	18 ... 1000 Hz random, 3.17 g RMS, in all directions, to IEC 68-2-36
Supply voltage	
Supply	18.5 ... 300 V DC/ 85 ... 260 V AC, 50 ... 60 Hz
Fluctuation	No limit
Power consumption	7.5 W/15 VA
EMC performance	
Emission	EN/IEC 61000-6-4 (Industry)
Immunity	EN/IEC 61000-6-2 (Industry)
NAMUR	Within the value limits according to "General requirements" with error criteria A in accordance with NE 21
Environment	Within the value limits according to "General requirements" with alarm criteria A in accordance with NE 21
Environmental conditions acc. to IEC/EN/UL 61010-1	<ul style="list-style-type: none"> Altitude up to 2000 m Pollution degree 2
Maintenance	The flowmeter has a built-in error log/pending menu which should be inspected on a regular basis.
Cable glands	Cable gland are available in Nylon, Nickel plated brass or stainless steel (316L/W1.4404) in the following dimensions: <ul style="list-style-type: none"> M20 ½" NPT
Cable	Standard industrial signal cable up to 200 m long with 2 x screened pairs or 4-wire overall screen can be laid between the sensor and transmitter. Siemens offers cables in a selection of pre-cut lengths and prepared for either gland or plug connection.

Approvals	
Hazardous area	<ul style="list-style-type: none"> • ATEX Ex II 2(1) GD Ex d e [ia] ia IIC T6 Gb • FM/CSA Class1 Div. 1 • IEC Ex II 2(1) GD Ex d e [ia] ia IIC T6 Gb
Custody transfer	<ul style="list-style-type: none"> • OIML R 117 type approval to a wide variety of liquids other than water • NTEP (USA) type evaluation program approval to a wide variety of liquids
Pressure equipment	<ul style="list-style-type: none"> • PED • CRN • Unfired pressure vessels (UK)
Hygienic applications	<ul style="list-style-type: none"> • EHEDG for all sensors • 3A for hygienic variant sensors • External cleanability satisfies EHEDG and 3A rules
Certificates	
Safety Integration Level (applies only to compact versions)	<ul style="list-style-type: none"> • SIL 3 for software • SIL 2 for hardware • SIL 3 for redundant hardware systems
CE mark	<ul style="list-style-type: none"> • Pressure equipment • Low voltage directive • WEEE • RoHS
Regional certifications	<ul style="list-style-type: none"> • C-TICK (Australia and New Zealand EMC) • NEPSI (China Ex) • TISS (Japan)

Flow Measurement

SITRANS F C

Transmitter FCT030

Selection and Ordering data	Order No.
SITRANS FCT030 Transmitter for replacement or installation extension for SITRANS FC430 Digital coriolis flowmeter	7ME4603 -
Transmitter with HART, I/O and LUI, for compact or remote mounting, weatherproof and flameproof (where specified). Order the sensor separately.	0
Material and mounting style	
Compact, IP67, aluminum	◆ 2
Remote, IP67, aluminum, M12	◆ 5
Remote, IP67, aluminum, T/Box	◆ 8
Ex approvals	
Non-Ex	◆ A
ATEX II 2GD	◆ C
IECEX GDb	◆ F
FM/CSA/UL Class 1, Div 1	◆ H
Cable glands	
Metric, no glands	◆ A
Metric, plastic	◆ B
Metric, brass/Ni plated	◆ E
Metric, stainless steel	◆ F
NPT, no glands	◆ G
NPT, plastic	◆ H
NPT, brass/Ni plated	◆ L
NPT, stainless steel	◆ M
Power supply	
18 ... 300 V DC; 18 ... 85, 185 ... 250 V AC, 50/60 Hz	◆ 0
Enclosure protection rating	
IP67/NEMA 4X	◆ 4
Local User Interface	
Blind	◆ 1
Graphical, 240x160 pxl	◆ 3
Software functions	
Standard	◆ A
I/O configuration Ch1	
Ca 4 ... 20 mA HART active SIL certified	◆ E
Cp 4 ... 20 mA HART passive SIL certified	◆ F

◆ Short lead time (details in PMD)

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
I/O configuration Ch2, Ch3 and Ch4	
None	◆ F00
aSignal, None, None	◆ F40
aSignal, aSignal, None	◆ F41
aSignal, aSignal, aSignal	◆ F42
aSignal, aSignal, Ia	◆ F43
aSignal, aSignal, R	◆ F44
aSignal, Ia, None	◆ F45
aSignal, Ia, Ia	◆ F46
aSignal, Ia, R	◆ F47
aSignal, R, None	◆ F50
aSignal, R, R	◆ F51
pSignal, None, None	◆ F60
pSignal, pSignal, None	◆ F61
pSignal, pSignal, pSignal	◆ F62
pSignal, pSignal, Ip	◆ F63
pSignal, pSignal, R	◆ F64
pSignal, Ip, None	◆ F65
pSignal, Ip, Ip	◆ F66
pSignal, Ip, R	◆ F67
pSignal, R, None	◆ F70
pSignal, R, R	◆ F71
aSignal, aSignal, pSignal	F80
aSignal, aSignal, Ip	F81
aSignal, pSignal, None	F82
aSignal, pSignal, pSignal	F83
aSignal, pSignal, Ia	F84
aSignal, pSignal, Ip	F85
aSignal, pSignal, R	F86
aSignal, Ia, Ip	F87
aSignal, Ip, None	F90
aSignal, Ip, Ip	F91
aSignal, Ip, R	F92
pSignal, pSignal, Ia	F93
pSignal, Ia, None	F94
pSignal, Ia, Ia	F95
pSignal, Ia, Ip	F96
pSignal, Ia, R	F97

Notes on I/O configurations:

a or p suffix: The I/O module is selected at ordering with either active or passive function.

Signal: The output can be selected for Current (0 or 4 to 20 mA), frequency or pulse function in the menu.

I: Discrete status input to the flowmeter. Functions are selected in the menu including 'Freeze output', 'Reset totalizer'.

R: Relay output for discrete status reporting. Function is selected in the menu, including 'Error', 'High flow warning'.

The MLFB structure for FC430 systems must be filled to **this level**, including "-Z" options A..., B..., E... and F...


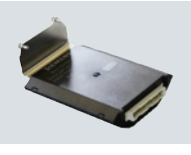



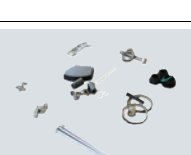





Selection and Ordering data		Order code
Add-on options and accessories		
Please add "-Z" to Order No. and specify Order code(s).		
Certificates		
Factory certificate to EN 10204 2.1	◆	C10
Factory certificate to EN 10204 2.2	◆	C11
Cable		
None	◆	L50
5 m (16.4 ft), standard with M12 plugs fitted	◆	L51
5 m (16.4 ft), standard	◆	L52
10 m (32.8 ft) standard with M12 plugs fitted	◆	L55
10 m (32.8 ft), standard	◆	L56
25 m (82 ft), standard with M12 plugs fitted	◆	L59
25 m (82 ft), standard	◆	L60
50 m (164 ft), standard with M12 plugs fitted	◆	L63
50 m (164 ft), standard	◆	L64
75 m (246 ft), standard with M12 plugs fitted	◆	L67
75 m (246 ft), standard	◆	L68
150 m (492 ft), standard with M12 plugs fitted	◆	L71
150 m (492 ft), standard	◆	L72
Additional data		
Please add "-Z" to Order No. and specify Order code(s) and plain text.		
Tag name		
Tag name plate, stainless steel		Y17
Transmitter setup		
Custom transmitter setup		Y20
◆ Short lead time (details in PMD)		
Operating instructions for SITRANS FC430		
Description	Order No.	
• English	A5E03361511	
• German	A5E03651143	
• Spanish	A5E03651152	
• French	A5E03651188	
• Italian	A5E03651190	
• Chinese	A5E03922773	
This device is shipped with a Quick Start guide and a CD containing further SITRANS F C literature.		
All literature is also available for free at: http://www.siemens.com/flowdocumentation		


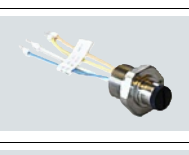



Flow Measurement

SITRANS F C






SITRANS FC430 Accessories/Spare parts

Spare parts - transmitter FCT030

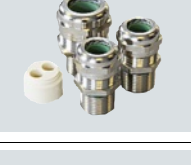
Description	Order No.	
Display and keypad assembly with firewire connection to the transmitter module	A5E03548971	
Sensor interface (Compact). Front end flow calculator and process detection. SIL 3 approved	A5E03549142	
Sensor interface (Remote); barrier unit for high speed digital communication and Ex ib power supply to remote front end DSL module	A5E03549098	
Display lid in painted aluminum with Ex glass plate and o-ring seal	A5E03549344	
Transmitter cassette (active) with SIL approved 4 ... 20 mA output and HART 7.2	A5E03549357	
Transmitter cassette (passive) with SIL approved 4 ... 20 mA output and HART 7.2	A5E03549383	
Bag of loose spare parts; including cable strain relief components, mounting tool, seals and gasket, assorted screws and washers, hex cap nut, blind plugs, and o-rings	A5E03549396	
Power supply 240 V AC, 47 ... 63 Hz 24 ... 90 V DC	A5E03549413	
Blind lid in painted aluminum with o-ring seal	A5E03549429	
I/O assembly Advise Order code F00 to F97 from Selection and Ordering data	A5E03939114	
SensorFlash (1 GB micro SD card)	A5E03915258	






Description	Order No.	
Mounting bracket - FCT030; in painted aluminum for pipe or wall mounting of transmitter FCT030 remote version. Including lock ring, pressure pads and seal cap	A5E03906091	
M12 option for sensor housing in stainless steel. Pre-wired and potted to replace M12 socket in DSL housing	A5E03906095	
M12 option - remote - in painted aluminum. Pre-wired and potted replacement M12 connection for FCT030 transmitter remote version	A5E03906104	
Remote terminal house - M20	A5E03906112	
Remote terminal house - NPT - in painted aluminum for sensor cable termination at FCT030 transmitter remote version. Pre-wired and potted	A5E03906130	

Spare parts - sensor FCS400

Description	Order No.	
Blind lid in painted aluminum with o-ring seal	A5E03549295	
Sensor link insert. Front end flow calculator and process detection. SIL 3 approved	A5E03549191	
Sensor housing metric	A5E03549313	
Sensor housing NPT in painted aluminum	A5E03906080	
Bag of loose parts for sensor; including cable strain relief components, washer, seals, o-rings, and assorted screws	A5E03549324	

Accessories

Description	Order No.	
Bag of glands (metric) in black plastic ¹⁾	A5E03907414	
Bag of glands (metric) in gray plastic Ex e/i ¹⁾	A5E03907424	
Bag of glands (metric) in AISI 316 SS ¹⁾	A5E03907429	
Bag of glands (metric) in NiPlatedBrass ¹⁾	A5E03907430	
Bag of glands (NPT) in black plastic ²⁾	A5E03907435	
Bag of glands (NPT) in gray plastic Ex e/i ²⁾	A5E03907451	
Bag of glands (NPT) in AISI 316 SS ²⁾	A5E03907467	
Bag of glands (NPT) in NiPlatedBrass ²⁾	A5E03907473	
Standard cable (non-Ex) with M12 plugs, PO insulation and PUR sleeve, gray, -40 ... +80 °C (-40 ... +176 °F)		
• 5 m (16.4 ft)	A5E03914805	
• 10 m (32.8 ft)	A5E03914850	
• 25 m (82 ft)	A5E03914853	
• 50 m (164 ft)	A5E03914859	
• 75 m (246 ft)	A5E03914861	
• 150 m (492 ft)	A5E03914874	
Standard cable (non-Ex) for termination, PO insulation and PUR sleeve, gray, -40 ... +80 °C (-40 ... +176 °F)		
• 5 m (16.4 ft)	A5E03914833	
• 10 m (32.8 ft)	A5E03914849	
• 25 m (82 ft)	A5E03914854	
• 50 m (164 ft)	A5E03914856	
• 75 m (246 ft)	A5E03914864	
• 150 m (492 ft)	A5E03914873	

Description	Order No.	
Standard cable (Ex) with M12 plugs, PO insulation and PUR sleeve, blue, -40 ... +80 °C (-40 ... +176 °F)		
• 5 m	A5E03914929	
• 10 m	A5E03914962	
• 25 m	A5E03914995	
• 50 m	A5E03915004	
• 75 m	A5E03915074	
• 150 m	A5E03915088	
Standard cable (Ex) for termination, PO insulation and PUR sleeve, blue, -40 ... +80 °C (-40 ... +176 °F)		
• 5 m	A5E03914945	
• 10 m	A5E03914973	
• 25 m	A5E03914984	
• 50 m	A5E03915015	
• 75 m	A5E03915057	
• 150 m	A5E03915100	
Service toolkit for field maintenance of transmitter and sensor components. Contains all hand tools necessary for maintenance. Other tools may be required for installation.	A5E03722877	
Heating Jacket, indoor use, 200 °C (392 °F) max. temperature. Complete with 5 m (16.4 ft) high temperature cable fitted. Dedicated plug connection to controller		
• DN 15 electric	A5E03830623	
• DN 25 electric	A5E03830624	
• DN 50 electric	A5E03830625	
• DN 80 electric	A5E03830626	
Heating jacket controller, IP65. Digital display for 0 ... 200 °C (32 ... 392 °F) control setpoint		
• 230 V AC	A5E03839193	
• 115 V AC	A5E03839194	

1) 2 pcs M20; 1 pce M25 with single and dual cable inserts

2) 2 pcs 1/2" NPT; 1 pce 1/2" NPT with single and dual cable inserts

Flow Measurement

SITRANS F C

SITRANS FC430 Accessories/Spare parts

Description	Dimension	Order No.
Mating parts for hygienic fittings DIN 11851 Includes: • 2 unions • 2 mating parts (for welding in) • 2 EPDM gaskets	DN 10	FDK:085U1016
	DN 15	FDK:085U1017
	DN 25	FDK:085U1019
	DN 32	FDK:085U1020
	DN 40	FDK:085U1021
	DN 50	FDK:085U1022
	DN 65	FDK:085U1023
Mating parts for hygienic clamp ISO 2852 Includes: • 2 clamps • 2 mating parts • 2 EPDM gaskets	25 mm	FDK:085U1029
	40 mm	FDK:085U1031
	50 mm	FDK:085U1032
2 EPDM gaskets with collar for mounting set DIN 11851	DN 10	FDK:085U1006
	DN 15	FDK:085U1007
	DN 25	FDK:085U1009
	DN 32	FDK:085U1010
	DN 40	FDK:085U1011
	DN 50	FDK:085U1012
DN 65	FDK:085U1013	